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(56) Documents cited  
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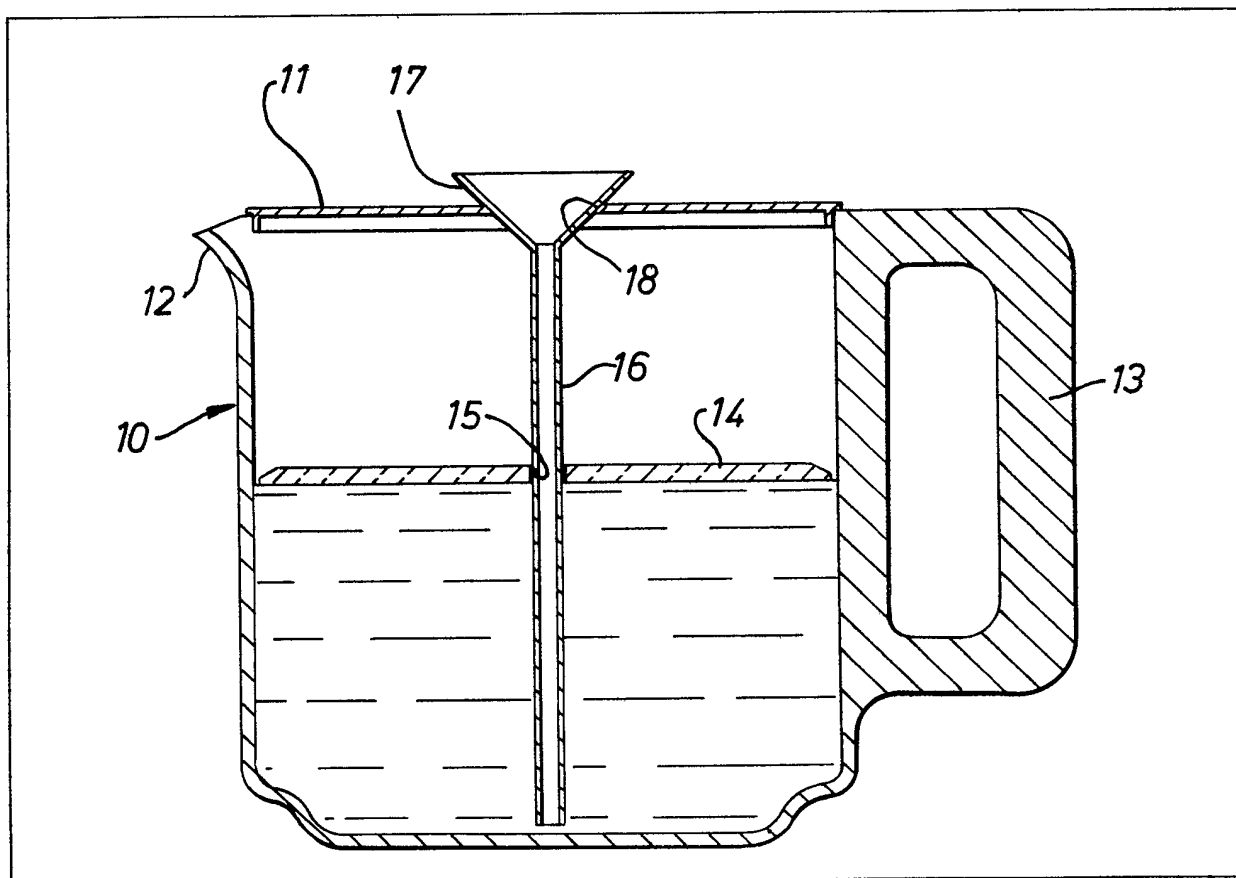
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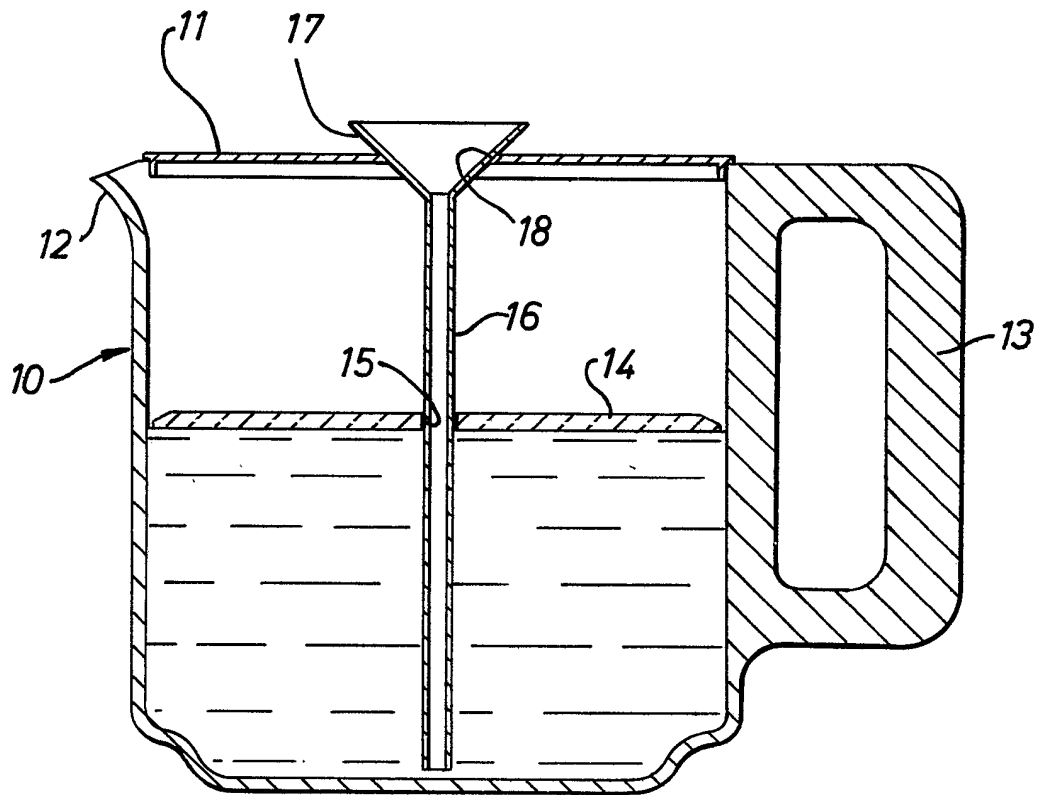
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(54) **A method of and apparatus for  
reducing the rate of cooling of a hot  
beverage**

(57) A float (14) is used to seal or substantially seal the surface of a hot beverage in a container (10) from the atmosphere to reduce the rate of cooling of the beverage. The container may form part of a beverage maker such as filter coffee or tea maker in which the brewed beverage drips into the container. In this case, a tube (16) having a funnel (17) at one end may be supported in an upright or substantially upright position in the container with the funnel at the upper end of the tube and the lower end at the tube just above the bottom of the container. The tube may extend through an aperture in the float and both the tube and float may be of thermally insulating material.



The drawing(s) originally filed was/were informal and the print here reproduced is taken from a later filed formal copy.



## SPECIFICATION

### A method of and apparatus for reducing the rate of cooling of a hot beverage

5 This invention relates to a method of and apparatus for reducing the rate of cooling of a hot beverage, e.g. coffee or tea.

According to one aspect of the invention, there is  
10 provided a method of keeping a beverage at an elevated temperature, in which a float is used to seal or substantially seal the surface of the beverage in a container from the atmosphere.

The amount of water able to evaporate from a  
15 surface depends upon the relative humidity or amount of water vapour in the atmosphere immediately above the surface and the presence of convection currents which remove saturated layers of air replacing them with unsaturated layers. Evaporation  
20 of just a small amount of liquid entails a large heat loss due to the high value of the latent heat of vaporisation.

For example, from a jugful of water at 85°C approximately half of its heat loss is from the surface  
25 and most of this is due to evaporation; at higher temperatures an even larger proportion can be attributed to evaporation. The use of a float to seal or substantially seal the surface of the liquid will prevent most of the evaporation from taking place.

30 Preferably, the float is formed of thermally insulating material. Hence, heat loss due to conduction and radiation will be reduced.

Some beverages, e.g. milk, in an open container, form skins when at a temperature near their boiling  
35 point and the use of the float will prevent skin formation.

Moreover, for beverages such as coffee, the aroma should be sealed in and the float will serve this purpose also.

40 According to another aspect of the invention there is provided apparatus for keeping a beverage at an elevated temperature, comprising a beverage container and a float dimensioned such that when the container contains a beverage, the float seals or  
45 substantially seals the surface of the beverage from the atmosphere.

Preferably, the float is formed of thermally insulating material.

In one embodiment of the invention, the container  
50 is of a type used in filter coffee or tea makers in which the brewed drink drips into the container, and in this case, advantageously, the apparatus also includes a tube supported in an upright or substantially upright position in the container and having a  
55 funnel at its upper end.

Preferably, the tube extends through an aperture in the float, and terminates adjacent to the bottom of the container.

Advantageously, the tube and funnel are formed  
60 of thermally insulating material.

Conveniently, the container has a lid provided with an aperture for locating the funnel and supporting the tube in said upright or substantially upright position.

65 In yet another aspect of the invention, there is

provided apparatus for use in a beverage maker, such as a filter coffee or tea maker in which in use the brewed beverage drips into a container, comprising in combination the container, a tube having a  
70 funnel at one end, and means for supporting the tube in an upright or substantially upright position in the container with the funnel at the upper end of the tube.

Advantageously, the tube and funnel are formed  
75 of thermally insulating material.

Preferably, the container has a lid provided with an aperture for locating the funnel and supporting the tube in said upright or substantially upright position. The length of the tube should be such that when  
80 supported the lower end of the tube is just above the bottom of the container.

The invention will now be more particularly described, by way of example, with reference to the accompanying drawing which is a sectional side  
85 view of one embodiment of a device according to the invention.

Referring to the drawing, the apparatus shown therein forms part of a filter coffee maker and includes a container in the form of a jug 10 having a  
90 removable lid 11, a pouring lip 12 and a handle 13. The apparatus also includes a float 14 having a central aperture 15, and a tube 16 having a funnel 17 at its upper end.

The lid 11 has an aperture 18 which locates the  
95 funnel 17 and supports the tube 16 in an upright or substantially upright position in the container.

The tube 16 and funnel 17 are formed of thermally insulating material and the tube terminates at its lower end just above the bottom of the jug 10.

100 The float 14 is formed of thermally insulating material and is shaped and dimensioned so as to rise upwards in the container as coffee is delivered to the bottom of the jug and underneath the float, whilst sealing or substantially sealing the surface of the coffee from atmosphere. Hence, the float will minimise evaporation from the surface of the coffee, reduce heat loss due to conduction and radiation from the surface of the coffee and seal in or  
105 substantially seal in the aroma. The funnel and tube, being of thermally insulating material, will considerably reduce the degree of cooling of the coffee droplets as they descend as compared with a conventional filter coffee maker in which the droplets fall through the air.

115 The tube 16 and funnel 17 could be omitted in which case the coffee droplets could pass to the underneath of the float 14 via the aperture 18 and/or via a gap between the float 14 and the wall of the jug 10.

120 Alternatively, the tube 16 and funnel 17 could be used, and the float 14 could be omitted.

Apparatus similar to the above could also be used in conjunction with other beverage makers, e.g. a tea maker. Moreover, the float alone could be used, for  
125 example, to considerably reduce or indeed eliminate evaporation from the surface a beverage, e.g. tea or coffee, in a mug, cup or other beverage container.

## CLAIMS

1. A method of keeping a beverage at an elevated temperature, in which a float is used to seal or substantially seal the surface of the beverage in a container from the atmosphere.
2. The method of claim 1, wherein the float is formed of thermally insulating material.
3. Apparatus for keeping a beverage at an elevated temperature, comprising a beverage container and a float-dimensioned such that when the container contains a beverage, the float seals or substantially seals the surface of the beverage from the atmosphere.
4. The apparatus of claim 3, wherein the float is formed of thermally insulating material.
5. The apparatus of claim 3 or claim 4, wherein the container is of a type used in filter coffee or tea makers in which the brewed drink drips into the container, and wherein the apparatus further includes a tube supported in an upright or substantially upright position in the container and having a funnel at its upper end.
6. The apparatus of claim 5, wherein the tube extends through an aperture in the float and terminates adjacent to the bottom of the container.
7. The apparatus of claim 5 or claim 6, wherein the tube and funnel are formed of thermally insulating material.
8. The apparatus of any one of claims 5 - 7, wherein the container has a lid provided with an aperture for locating the funnel and supporting the tube in said upright or substantially upright position.
9. Apparatus for use in a beverage maker in which, in use, the brewed beverage drips into a container, comprising in combination the container, a tube having a funnel at one end, and means for supporting the tube in an upright or substantially upright position in the container with the funnel at the upper end of the tube.
10. The apparatus of claim 9, wherein the tube and funnel are formed of thermally insulating material.
11. The apparatus of claim 9 or claim 10, wherein the container has a lid provided with an aperture for locating the funnel and supporting the tube in said upright or substantially upright position.
12. The apparatus of claim 11, wherein the length of the tube is such that when supported the lower end of the tube is just above the bottom of the container.
13. Apparatus for use in a beverage maker, substantially as hereinbefore described with reference to and as shown in the accompanying drawings.

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**ABSTRACT:**

A float (14) is used to seal or substantially seal the surface of a hot beverage in a container (10) from the atmosphere to reduce the rate of cooling of the beverage. The container may form part of a beverage maker such as filter coffee or tea maker in which the brewed beverage drips into the container. In this case, a tube (16) having a funnel (17) at one end may be supported in an upright or substantially upright position in the container with the funnel at the upper end of the tube and the lower end at the tube just above the bottom of the container. The tube may extend through an aperture in the float and both the tube and float may be of thermally insulating material.

